NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Mooresville Regional Office
County: Cabarrus
NC Facility ID: 1300051
Inspector's Name: Melinda Wolanin
Date of Last Inspection: 11/13/2018
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): S&D Coffee, Inc.

Facility Address:
S&D Coffee, Inc.
300 Concord Parkway South
Concord, NC 28027

SIC: 2095 / Roasted Coffee
NAICS: 31192 / Coffee and Tea Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0503, 02D .0515, 02D .0516, 02D .0521, 02D .0614, 02D 1100, 02D .1111, 02D .1806
NSPS: JJJJ
NESHAP: ZZZZ, DDDDD
PSD:
PSD Avoidance: 02Q .0317 (avoidance of 02D .0902)
NC Toxics: 02D .1100, 02Q .0711
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Zack Bogart Maintenance Planner and Scheduler (704) 794-8112 300 Concord Parkway South Concord, NC 28027	Scott Seebold VP of Operations (704) 782-3121 300 Concord Parkway South Concord, NC 28027	Sal DiGiovanni Engineering Manager (704) 782-3121 300 Concord Parkway South Concord, NC 28027

Application Data

Application Number: 1300051.19A
Date Received: 01/15/2019
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part II

Existing Permit Data
Existing Permit Number: 05029/T18
Existing Permit Issue Date: 10/09/2018
Existing Permit Expiration Date: 03/31/2021

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2017	0.0400	6.70	82.33	18.49	12.23	21.49	13.00 [Acetaldehyde]
2016	0.0400	6.51	77.59	17.49	11.68	20.19	12.10 [Acetaldehyde]
2015	0.0600	9.52	78.87	5.66	11.95	20.57	12.34 [Acetaldehyde]
2014	0.0600	9.63	83.42	5.65	12.43	21.74	13.03 [Acetaldehyde]
2013	0.0400	6.32	78.92	3.09	11.20	20.58	12.41 [Acetaldehyde]

Review Engineer: Urva Patel

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 05029/T19
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application:

Currently, S&D Coffee, Inc. (S&D) holds Title V Permit No. 05029T18 with an expiration date of March 31, 2021, issued as the Part I of a two-step significant modification process under 15A NCAC 02Q .0501(b)(2). The Part II application was due 12 months from commencing operations of the new/proposed modified sources. The TV-Sign-501(b)(2) Part II modification permit application (**Application No. 1300051.19A**) was received on January 15, 2019. This application is submitted for the installation and operation of a new Roaster No. 2 as a replacement, Cooling and Destoning System, Catalytic Oxidizer, Cooling Cyclone, and Destoning Cyclone; installation and operation of two new chaff handling systems (ES-CHS1 and ES-CH2); and installation of Ground coffee bean conveying and packaging line 401/402 (IS-401/402). This Part II application takes these modifications to public notice and EPA review in order to extend the permit shield as described in General Condition R to this equipment. No modifications to the permitted equipment as originally submitted in the Part I application are needed as part of this second step.

A regulatory review for these sources was completed in the issuance of permit 050293T17 (**Application No. 1300051.17A**) indicating expected compliance with all applicable emission limits. Please, see Urva Patel's **July 5, 2017** permit review, which is provided as Attachment 1 to this document.

2. Facility Description:

S&D Coffee, Inc. processes green coffee beans into roasted coffee products, including whole and ground beans, located in Concord, Cabarrus County, North Carolina. The coffee roasting process consists of cleaning, roasting, cooling, and packaging operations. The facility also mixes and packages tea leaves. Existing operations include six natural gas-fired coffee bean roasters each controlled by either a catalytic or thermal oxidizer, six cooling and de-stoning systems controlled by simple cyclones, and green bean and tea handling operations controlled by bagfilters. The facility operates the roasting process twenty-four hours per day, five to six days a week, and the packaging department operates sixteen to twenty hours per day, six days per week, fifty-two weeks per year.

3. History / Background / Application Chronology:

Application Chronology

January 15, 2019	Received application for TV-Sign-501(b)(2) Part II modification permit.
January 15, 2019	Sent acknowledgement letter indicating that the application for TV-Sign-501(b)(2) Part II modification permit was incomplete due to partial application fee submission.
January 30, 2019	The Department received remaining application fees. This application was deemed complete.

4. Summary of Changes to the Existing Permit (Permit No. 05029T18):

Page No.	Section	Description of Changes
Cover Letter	N/A	• Update cover letter for application number, permit numbers, dates, fee class, PSD increment statement and Chief name.
Permit Cover	N/A	• Insert new issuance, complete application date and application number.
7	2.1 A.4	• Removed condition 15A NCAC 02Q .0504 as the facility submitted application for beginning operation of the source (ES-RS-New) within a year of start-up of the source.
6 8 10 18 20	2.1 A.3.c 2.1 B.2.c 2.1 C.2.c 2.1 F.2.c 2.1 G.2.c	• Revised Visible emissions condition language as per TVCOND69.

5. Compliance Status:

DAQ has reviewed the compliance status of this facility. During the most recent inspection conducted on November 13, 2018, Melinda Wolanin of the of the Mooresville Regional Office indicated that the facility appeared to be in compliance with all applicable requirements.

Five-year Compliance History:

- On March 11, 2016, the Mooresville Regional Office of Air Quality (DAQ) sent the facility a letter serving as a Notice of Violation (NOV) for failure to submit Title V Annual Compliance Certification (ACC) Report within the required timeframe under Air Permit No. 05029T15. Title V ACC was due on by March 1, 2016. It received on March 8, 2016. The violation has been resolved.
- The facility was inspected on December 7, 2016 and appeared to be in compliance with all applicable air quality regulations.

6. New/Modified Equipment/Changes in Emissions:

This application is submitted as a second step (Part II) of two-step significant modification. The facility received Permit No. 05029T17 on July 5, 2017, which authorized construction of a new Roaster No. 2 as a replacement, Cooling and Destoning System, Catalytic Oxidizer, Cooling Cyclone, and Destoning Cyclone; two new chaff handling systems (**ID Nos. ES-CHS1 and ES-CH2**); and Ground coffee bean conveying and packaging line 401/402 (IS-401/402). As stated in Permit No. 05029T17, S&D must submit a Title V permit modification application to incorporate the new sources into the Title V Permit within 12 months of startup. The facility constructed ES-R2-New at the facility and started operation of the new equipment on March 15, 2018; therefore, the Title V significant modification application must be submitted on or before March 15, 2019. This requirement was met with the submittal of permit application no. 1300051.19A on January 15, 2019.

Equipment to be ADDED:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
Roaster 2			
ES-R2-New	natural gas-fired coffee bean roasting operation (6.8 million Btu per hour maximum rated input and 4,400 pounds per hour maximum process rate)	CD-R2-New-CO	Natural gas-fired catalytic oxidizer (3 million Btu per hour maximum rated input)
ES-R2C-New	cooling and de-stoning system (4,400 pounds per hour maximum process rate)	CD-R2-New-CC, CD-R2-New-DC	cooling cyclone (63 inches in diameter) and de-stoning cyclone (52 inches in diameter) installed in series
ES-CHS1 and ES-CHS2	Chaff handling system	CD-CHS1-BF CD-CHS2-BF	Bagfilter (862 square feet of filter area) Bagfilter (862 square feet of filter area)

Please see **July 5, 2017** Permit review (05029T17), which is provided as an Attachment to this document for more details.

7. Regulatory Review

Unless specifically noted, a detailed discussion of the following list of equipment and all associated permit conditions is not included as applicability status has not changed. The permit conditions have been modified to reflect the most current language, as necessary. The facility is expected to be in continued compliance.

15A NCAC 02D .0503: Particulates from Fuel Burning Indirect Heat Exchangers

15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes
15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
15A NCAC 02D .0521: Control of Visible Emissions
15A NCAC 02D .0614: Compliance Assurance Monitoring
15A NCAC 02D .1100: Control of Toxic Air Pollutants (State-enforceable only)
15A NCAC 02D .1111: Maximum Achievable Control Technology (40 CFR 63, Subpart ZZZZ)
15A NCAC 02D .1111: Maximum Achievable Control Technology (40 CFR 63, Subpart DDDDD)
15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions (State-enforceable only)
15A NCAC 02Q .0317: Avoidance Conditions (Avoidance of 15A NCAC 02D .0902)
15A NCAC 02Q .0711: Control of Toxic Air Pollutants (State-enforceable only)

8. NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM

NSPS

The Natural gas-fired emergency generator (**ID No. ES-EG**) is subject to 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. This permit modification does not change this status.

NESHAP/MACT

This facility is a major source for HAPs emissions and is subject to the National Emission Standards for Hazardous Air Pollutants, 40 CFR 63, Subpart ZZZZ and Subpart DDDDD. This permit modification does not change this status.

NSR/PSD

The facility is classified as PSD minor. Cabarrus County's minor source baseline for PM10 and SO_2 has been triggered. No emissions increases are associated with this permit modification; therefore, increment tracking will not be required.

112(r)

This facility is **NOT** subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements.

RACT

Cabarrus County was designated as a moderate nonattainment area for the 1997 8-hour ozone standard. S&D has accepted an avoidance condition limiting VOCs to less than 100 tons per year to avoid applicability to RACT. All counties in NC were re-designated as attainment effective August 27, 2015. [Ref: Federal Register /Vol. 80, No. 144 /Tuesday, July 28, 2015 /Rules and Regulations.] The facility must keep the VOC avoidance condition in the permit, because the limitation was used to bring the area back into attainment. For detailed avoidance condition information, see Attachment (permit review 05029T17).

Compliance Assurance Monitoring (CAM)

The compliance assurance monitoring (CAM) rule requires the facility to conduct monitoring to provide a reasonable assurance of compliance with applicable requirements under this act. Monitoring focuses on emission units that rely on pollution control devices to achieve compliance with applicable standards. Per 40 CFR 64.5 (and 15A NCAC 02D .0614(e)), an analysis for CAM applicability is required to be submitted with a permit application for large pollution-specific emissions units (PSEU). A large PSEU is one that has a post-control potential to emit of more than major source levels. The new catalytic oxidizer is not considered a large PSEU and therefore a CAM analysis is NOT required as a part of this permit application.

9. Facility-Wide Air Toxics:

The current permit includes modeled emission rates based on previous approved modeling demonstrations. The most recent modeling was conducted in 2008 because of the addition of a new coffee roaster, ES-R6. The modeling reviewed by Tom Anderson indicated compliance with the acceptable ambient levels (AALs) on a source-by-source basis. This application

does not trigger a new air toxic review or request any changes of emission limits. No further air toxics evaluation is required at this time. For detailed emission discussion, see Attachment (permit review 05029T17).

10. Facility Emission Review:

There are no changes in potential emissions under this permit modification. Actual emissions for 2013 through 2017 are reported in the header of this permit review.

11. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. South Carolina and Mecklenburg County-local program are an affected state and a local program within 50 miles of the facility.

12. Other Regulatory Considerations:

- An application fee is required with this permit application.
- A Professional Engineers Seal is not required with this permit application.
- A zoning consistency determination is not required for this permit application.
- A 30-day public notice and 45-day EPA review is required for this permit application.

13. Recommendations/Conclusion:

TBD

ATTACHMENT

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: July 5, 2017

Region: Mooresville Regional Office
County: Cabarrus
NC Facility ID: 1300051
Inspector's Name: Melinda Wolanin
Date of Last Inspection: 12/07/2016
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): S&D Coffee, Inc.

Facility Address:
S&D Coffee, Inc.
300 Concord Parkway South
Concord, NC 28027

SIC: 2095 / Roasted Coffee
NAICS: 31192 / Coffee and Tea Manufacturing

Facility Classification: Before: Title V **After:**
Fee Classification: Before: Title V **After:**

Permit Applicability (this application only)

SIP: 02D .0503, 02D .0515, 02D .0516, 02D .0521, 02D .0614, 02D 1100, 02D .1111, 02D .1806, 02Q .0711
NSPS: JJJJ
NESHAP: ZZZZ, DDDDD
PSD:
PSD Avoidance: 02Q .0317 (avoidance of 02D .0902)
NC Toxics: 02D .1100
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Sal DiGiovanni Engineering Manager (704) 782-3121 300 Concord Parkway South Concord, NC 28027	Scott Seebold VP of Operations (704) 782-3121 300 Concord Parkway South Concord, NC 28027	Sal DiGiovanni Engineering Manager (704) 782-3121 300 Concord Parkway South Concord, NC 28027

Application Data

Application Number: 1300051.17A
Date Received: 03/13/2017
Application Type: Modification
Application Schedule: TV-Sign-501(c)(2) Part I

Existing Permit Data
Existing Permit Number: 05029/T16
Existing Permit Issue Date: 04/11/2016
Existing Permit Expiration Date: 03/31/2021

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2015	0.0600	9.52	78.87	5.66	11.95	20.57	12.34 [Acetaldehyde]
2014	0.0600	9.63	83.42	5.65	12.43	21.74	13.03 [Acetaldehyde]
2013	0.0400	6.32	78.92	3.09	11.20	20.58	12.41 [Acetaldehyde]
2012	0.0400	6.05	81.62	3.17	10.79	21.37	13.07 [Acetaldehyde]
2011	0.0300	5.17	68.35	2.65	9.02	17.90	10.95 [Acetaldehyde]

Review Engineer: Urva Patel

Review Engineer's Signature: **Date:** 07/05/2017

Comments / Recommendations:

Issue 05029/T17
Permit Issue Date: July 5, 2017
Permit Expiration Date: March 31, 2021

1. Purpose of Application:

Currently, S & D Coffee, Inc. (S&D) holds Title V Permit No. 05029T16 with an expiration date of March 31, 2021. The TV-Sign-501(c)(2) Part I modification permit application (**Application No. 1300051.17A**) was received on March 15, 2017. The facility requests following:

- Removal of permitted coffee bean roaster, Roaster No. 2, Cooling and Destoning System, Catalytic Oxidizer, Receiving Cyclone, Cooling Cyclone, and Destoning Cyclone
- Installation of a new Roaster No. 2 as a replacement, Cooling and Destoning System, Catalytic Oxidizer, Cooling Cyclone, and Destoning Cyclone
- Installation of two new chaff handling systems (ES-CHS1 and ES-CH2)
- Installation of Ground coffee bean conveying and packaging line 401/402 (IS-401/402)

2. Facility Description:

The S & D Coffee, Inc. (S & D) processes green coffee beans into roasted coffee products, including whole and ground beans, located in Concord, Cabarrus County, North Carolina. The coffee roasting process consists of cleaning, roasting, cooling, and packaging operations. The facility also mixes and packages tea leaves. Existing operations include six natural gas-fired coffee bean roasters each controlled by either a catalytic or thermal oxidizer, six cooling and de-stoning systems controlled by simple cyclones, and green bean and tea handling operations controlled by bagfilters. The facility operates the roasting process twenty-four hours per day, five to six days a week, and the packaging department operates sixteen to twenty hours per day, six days per week, fifty-two weeks per year.

3. History / Background / Application Chronology:

Permit History Since Last Permit Renewal

April 11, 2016	Title V Air Permit No. 05029T16 issued. This permit includes renewal of Title V Air Permit.

Application Chronology

March 15, 2017	Received application for TV-Sign-501(c)(2) Part I modification permit.
March 20, 2017	Sent acknowledgement letter indicating that the application for TV-Sign-501(c)(2) Part I modification permit was complete.
June 19, 2017	The facility accepted this project as TV-Sign-501(c)(2) Part I modification due to 15A NCAC 02Q .0516(b)(3) (new control device and it is subject to avoidance condition for 02D .0902).

4. Summary of Changes to the Existing Permit (Permit No. 03059T46):

Page No.	Section	Description of Changes
Cover Letter	N/A	Update cover letter for application number, permit numbers, dates, fee class, PSD increment statement and Chief name.
Permit Cover	N/A	Insert new issuance, complete application date and application number.
3	Insignificant Activities list	• Addition of Chaff Handling System cyclones (**ID Nos. CD-CHS1-C and CD-CHS2-C**) • Addition of Chaff handling system – divert lines (**ID Nos. CD-CHS1-DLC and CD-CHS2-DLC**) • Addition of Conveying and packaging line **(ID Nos. IS-401/402 with IS-401/402-BF**) as insignificant activity

Page No.	Section	Description of Changes
5, 19	Section 2.1. A and Section 2.2	• Removal of Roaster No. 2 (**ID No. ES-R2**), receiving cyclone (**ID No. EP-R2-RVC**), Cooling and destoning system (**ID No. ES-R2C**), and control devices (**ID Nos. CD-R2-CO, CD-R2-CC, and CD-R2-DC**) • Addition of new roaster No. 2 **(ID No. ES-R2-New)** and control devices (**ID No.CD-R2-New-CO**) • Addition of Cooling and destoning system (**ID NO. ES-R2C-New**) and control devices (**ID No. CD-R2-New-CC and CD-R2-New-DC**)
7	Section 2.1 B Table	• Added VOC limit and regulation in the table as it was missed in the previous permit
4, 17	Section 2.1. F	• Addition of two new chaff handling systems (**ID Nos. ES-CHS1 and ES-CHS2 with CD-CHS1-BF and CD-CHS2-BF**)
13	2.1 D.3.i	• Revised NSPS condition regarding "emergency demand response"
21	2.2 B.1.c	• Revised 02Q .0317 Condition - Added condition c. for Roaster No. 2

5. Compliance Status:

DAQ has reviewed the compliance status of this facility. During the most recent inspection conducted on December 7, 2016, Melinda Wolanin of the of the Mooresville Regional Office indicated that the facility appeared to be in compliance with all applicable requirements. Additionally, a signed Title V Compliance Certification (Form E5) indicating that the facility was following all applicable requirements was submitted with Application No. 1300051.17A on March 15, 2017.

Five-year Compliance History:

- On February 8, 2012, the Mooresville Regional Office of Air Quality (DAQ) sent facility a letter serves as a Notice of Deficiency (NOD) for failure to submit the required report within the required timeframe under Air Permit No. 05029T13. It was for a late semi-annual report. The deficiency has been resolved and the facility is in-compliance.
- On March 11, 2016, the Mooresville Regional Office of Air Quality (DAQ) sent facility a letter serves as a Notice of Violation (NOV) for failure to submit Title V Annual Compliance Certification Requirements within the required timeframe under Air Permit No. 05029T15. Title V ACC was due on by March 1, 2016. It received on March 8, 2016. The violation has been resolved.
- The facility was inspected on December 7, 2016 and appeared to be in compliance with all applicable air quality regulations.

6. New/Modified Equipment/Changes in Emissions:

This project is TV-Sign-501(c)(2) Part I modification as per 15A NCAC 02Q .0516(b)(3). It includes installation of new Roaster No. 2, new control device (Catalytic Oxidizer), and two new Chaff Handling Systems. This Catalytic Oxidizer requires to test in certain time-period and required to establish emission factor. The new Roaster No. 2 and control device is subject to avoidance condition. Therefore, this project is treated as TV-Sign-501(c)(2) Part I modification instead of minor modification.

The following modifications are being made to S & D Coffee, Inc. (S&D) permit:

- Removal of permitted coffee bean roaster, Roaster No. 2 (**ID No. ES-R2**); Removal of Cooling and Destoning System (**ID No. ES-R2C**): maximum production rate – 7,400 lb of green beans per hour
    - Roaster No. 2 (**ID No. ES-R2**) includes 8.0 MMBtu/hr natural gas-fired burner, receiving cyclone (**ID No. CD-R2-RVC**), Cooling/destoning cyclone (**ID No. CD-R2-C/DC**) and a natural gas-fired 4.0 MMBtu/hr catalytic oxidizer (**CD-R2-CO**). It was not operated for several years
- Installation of a new roaster as a replacement (**ID No. ES-R2-New**): maximum production rate – 4,400 lb of green coffee beans per hour (The new roaster will not have a receiving cyclone)
    - It is a 2.2 tons/hr coffee bean roaster with 6.8 MMBtu/hr burner fired by natural gas. It includes Catalytic oxidizer with 3.0 MMBtu/hr burner fired by natural gas, Cooling Cyclone, Destoning

Cyclone. Cooling and de-stoning system controlled by cooling cyclone in series with a de-stoning cyclone.

- Green coffee beans are sent to the roaster from the bean handling process. They first pass through the receiving cyclone before moving on to the roasting chamber. After the beans are roasted, they are quenched with water and then sent through a de-stoning and cooling cyclone before being sent to a packaging area.

Coffee Bean Roaster (**ES-R2-New)**	Uncontrolled Potential Emissions, tons/yr	Controlled Potential Emissions, tons/yr
PM	2.12	2.12
SO_2	0.03	0.03
NOx	4.21	4.21
Lead	2.10E-05	2.10E-05
CO_2	5107	5107
VOC	8.29	0.09
Acetaldehyde	80.77	4.44
Acetic Acid	0.91	0.05
Acrolein	0.02	1.10E-03
Formaldehyde	0.20	0.011
Hexane	1.15	0.063

- Installation of two new chaff handling system (**ID Nos. ES-CHS1 and ES-CH2**) with bagfilters (**ID Nos. CD-CHS1-BF and CD-CHS2-BF**)

New Chaff Handling System (**ES-CHS1)**	Uncontrolled Emissions, tons/yr	Controlled Emissions, tons/yr
PM	87.6	0.26

New Chaff Handling System (**ES-CHS2)**	Uncontrolled Emissions, tons/yr	Controlled Emissions, tons/yr
PM	92.0	0.28

- Addition of Ground coffee bean conveying and packaging line 401/402 (**ID Nos. IS-401/402**) and Bagfilter (**ID Nos. IS-401/402-BF**).
  - Design Capacity: 1.0125 tons/hr
  - This process is currently operating and was identified during internal inspections as equipment. It needed to be documented as an insignificant activity on TV permit.

Ground Coffee conveying and Packaging (**IS-401/402)**	Uncontrolled Potential Emissions, tons/yr	Controlled Potential Emissions, tons/yr
PM	2.46	0.025
PM_{10}	-	-
$PM_{2.5}$	-	-
SO_2	-	-
NOx	-	-
CO	-	-
VOC	-	-
Total HAPs	-	-

It is determined to be an insignificant activity due to amount of emissions of the source under 15A NCAC 02Q .0503(8). An insignificant activity means any activity

"...whose emissions potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, i.e., potential uncontrolled

emissions, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year."

With the uncontrolled emissions of HAPs from the proposed emission source are less than 1,000 pounds per year and criteria pollutants emissions are less than five tons per year as shown in the calculations above, the Ground coffee bean conveying and packaging line 401/402 (**ID No. IS-401/402**) meets the criteria for insignificant activities under 15A NCAC 02Q .0503(8). No permit is required for installation and operation of the equipment.

While the full permit stipulation will not be included in the permit since this is an insignificant piece of equipment, the facility shall still be required to comply with all applicable provisions including the notification, testing, reporting, and recordkeeping requirements. Compliance is expected and will be verified during facility inspections.

- **Total Change in Emissions:**

Coffee Bean Roaster Pollutant	NEW Uncontrolled Potential Emissions, tons/yr	NEW Controlled Potential Emissions, tons/yr	OLD Uncontrolled Potential Emissions, tons/yr	OLD Controlled Potential Emissions, tons/yr
PM	**2.12**	**2.12**	3.08	3.08
CO_2	**5107**	**5107**	8589	8589
VOC	**8.29**	**0.09**	862.16	43.11
Acetaldehyde	**80.77**	**4.44**	149.42	7.47
Acetic Acid	**0.91**	**0.05**	153.6	7.68
Acrolein	**0.02**	**1.10E-03**	1.76	8.78E-02
Formaldehyde	**0.20**	**0.011**	77.79	3.89
Hexane	**1.15**	**0.063**	2.13	0.106
MMBtu/hr (New Roaster No.2)	**6.8**		8.0	
MMBtu/hr (Catalytic Oxidizer)	**3.0**		4.0	
Production Rate, lb/hr	**4,400**		7,400	

There is minor decrease in emissions after installment of new Roaster No.2 due to burner size of roaster, heat input rate of control device, and production rate.

7. Regulatory Review

A. S & D Coffee, Inc. is subject to the following regulations. **Coffee bean roaster No. 2 (ID No. ES-R2-New) operation associated Cooling and De-stoning system (ID No. ES-R2C-New) and Control Devices (ID Nos. CD-R2-New-CO, CD-R2-New-CC, and CD-R2-New-DC)**

1. Applicable Regulatory Requirements:

- 15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes

The allowable emission rates for PM from any stack, vent, or outlet, resulting from any industrial process for which no other emission control standards are applicable, shall not exceed the level calculated with the equation:

For process weight rates less than or equal to 30 tph,

$E = 4.10*P^{0.67}$ where, E = allowable emissions (lb/hr)
P = process weight rate (tph)

Process	Process weight rate, tons/hr	Estimated hourly Controlled PM Emission rate, lb/hr	Allowable hourly PM Emission rate, lb/hr
Coffee Bean Roaster No. 2 (**ES-R2-New**)	2.20	0.60	6.95

As reported in the application, PM emission rates from the ES-R2-New includes process emissions from the roaster (0.48 lb/hr) plus PM emissions from the cooling and destoning cyclones (0.12 lb/hr). The facility is required to maintain production record which specify process rate, the types of materials and finishes processed and shall make these records available to a DAQ authorized representative upon request. Therefore, the compliance is expected.

- 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
  This regulation applies to all sources of combustion (ID Nos. ES-R2-New and CD-R2-New-CO) The allowable SO_2 limit is 2.3 lb/MMBtu heat input.

Process	Heat Input Rate, MMBtu/hr	Estimated hourly SO2 Emission Rate, lb/MMBtu	Allowable hourly SO2 Emission Rate, lb/MMBtu
Coffee Bean Roaster No. 2 (**ES_R2-New**)	6.8	5.88E-04	2.3
Catalytic Oxidizer (**CD-R2-New-CO**)	3.0	5.88E-04	2.3

No monitoring, recordkeeping or reporting is required when firing natural gas/biomass or wood in the combustion sources. These fuels are inherently low enough in sulfur, compliance with this standard is expected.

- 15A NCAC 02D .0521: Control of Visible Emissions
  As per 15A NCAC 02D .0521(d), for sources manufactured after July 1, 1971, the visible emissions from the facility shall not be more than 20% when averaged over a six-minute period. However, six-minute averaging periods may exceed 20% not more than once in any hour and not more than four times in any 24-hour period. In no event, shall the six-minute average exceed 87% opacity.

- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions
  This regulation is applicable to Roaster No. 2 (ID No. ES-R2-New). Because, this rule shall apply to all operations that may produce odorous emissions that can cause or contribute to objectionable odors beyond the facility's boundaries as per 15A NCAC 02D 1806(c). Therefore, compliance is expected.

- 15A NCAC 02D .1100: Control of Toxic Air Pollutants
  This is applicable to Roaster No. 2 (ID No. ES-R2-New) and control devices as it emits air toxics. As per 15A NCAC 02D .1102(a), this regulation applies to all facilities that emit a toxic air pollutant that are required to have a permit under 15A NCAC 02Q .0700. For more details see Section 9.

- 15A NCAC 02Q .0317: Avoidance Condition (Avoidance of 02D .0902)
  To avoid applicability of 15A NCAC 02D .0902, coffee bean roaster 1 through 6 shall discharge into the atmosphere less than 100 tons of VOCs per year. This is applicable to new Roaster No. 2 and associated cooling and destoning system.
  No change in emissions is requested as part of this permit modification as its replacement of roaster and control device
  The replacement catalytic oxidizer is 3 MMBtu/hr, which is 1 MMBtu/hr less than the existing thermal oxidizer (4.0 MMBtu/hr). As part of the review process, the Natural Gas Combustion Emissions Calculator was run to compare combustion emissions from both oxidizers (Please, see attached spreadsheet). No significant emissions change occurs on the proposed control device replacement.
  - Criteria Air Pollutant Emissions results in less than 1TPY decrease in potential emissions and no change in actual emissions,
  - Toxic/Hazardous Air Pollutant Emissions result in less than 100 lb/yr decrease and no change in actual emissions,

- Toxic/Hazardous Air Pollutant Emissions result in 1 lb/hr and 1.5 lb/yr decrease in potential emissions and no change in lb/yr actual emissions.

Because of replacement the control device, testing will be required within 180 days of commencing operation of the control device replacement to determine the new operating parameters, capture and destruction efficiencies.
The testing, monitoring, recordkeeping and reporting requirements were modified as necessary under the Reasonable Available Control Technology (RACT) avoidance condition.

- 15A NCAC 02Q .0711: Control of Toxic Air Pollutants
This regulation list the toxic permitting emission rates(TPERs) for each regulated TAP. The current permit requires that the facility maintain records indicating continued compliance with these emission rates. This permit modification does not affect this status. For more details see Section 9.

B. Chaff handling system (ID Nos. ES-CHS1 and ES-CHS2) and associated bagfilters (ID Nos. CD-CHS1-BF and CD-CHS2-BF)

1. Applicable Regulatory Requirements:

- 15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes
The allowable emission rates for PM from any stack, vent, or outlet, resulting from any industrial process for which no other emission control standards are applicable, shall not exceed the level calculated with the equation:
For process weight rates, less than or equal to 30 tph,

$E = 4.10*P^{0.67}$ where, E = allowable emissions (lb/hr)
P = process weight rate (tph)

Process	Process weight rate, tons/hr	Estimated hourly Controlled PM Emission rate, lb/hr	Allowable hourly PM Emission rate, lb/hr
Chaff Handling System No. 1 (**ES_CHS1**)	0.20	0.059	1.39
Chaff Handling System No. 1 (**ES_CHS2**)	0.21	0.065	1.44

Therefore, the compliance is expected.

- 15A NCAC 02D .0521: Control of Visible Emissions
As per 15A NCAC 02D .0521(d), for sources manufactured after July 1, 1971, the visible emissions from the facility shall not be more than 20% when averaged over a six-minute period. However, six-minute averaging periods may exceed 20% not more than once in any hour and not more than four times in any 24-hour period. In no event, shall the six-minute average exceed 87% opacity.

8. NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM

NSPS

The Natural gas-fired emergency generator (**ID No. ES-EG**) is subject to 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

The modifications discussed in this application do not affect this source nor do they have any regulatory implications with respect to this source. Any changes to this permit condition are outside of the scope of this modification and are listed in the Table of Changes, Section 4 above.

NESHAP/MACT

This facility is a major source for HAPs emissions.

The Natural gas-fired emergency generator (**ID No. ES-EG**) is subject 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The modifications

discussed in this application do not affect this source nor do they any regulatory implications with respect to this source. Any changes to this permit condition are outside of the scope of this modification and are listed in the Table of Changes, Section 4 above.

The natural gas-fired boiler (**ID No. ES-BLR1**) is subject to 40 CFR 63, Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters. The modifications discussed in this application do not affect this source nor do they have any regulatory implications with respect to this source. Any changes to this permit condition are outside of the scope of this modification and are listed in the Table of Changes, Section 4 above.

NSR/PSD

Cabarrus County is designated as a moderate nonattainment area for the 1997 8-hour ozone standard. All counties in NC were re-designated as attainment effective August 27, 2015. [Ref: Federal Register /Vol. 80, No. 144 /Tuesday, July 28, 2015 /Rules and Regulations.] The facility is minor for PSD because it has accepted an avoidance condition pursuant to 15A NCAC 02Q .0317 for 15A NCAC 02D .0902, to limit VOC emissions to less than 100 tons per year. Cabarrus county' s minor source baseline for PM10 and SO_2 has been triggered. Since the modification result in a decrease in potential emissions, no increment tracking will be required.

- 15A NCAC 02Q .0317, Avoidance Conditions – The facility has accepted the following conditions to avoid applicability of 02D .0530, Prevention of Significant Deterioration (PSD):
    - Coffee bean roasting operations including six roasted and associated cooling and destoning systems: Emissions of Volatile Organic Compounds (VOC) is limited to less than 100 tons per year. The new Catalytic Oxidizer (ID No. CD-R2-New-CO) will be used to limit VOC emissions. As per application, capture efficiency is 100% and Control Efficiency of CO is 94.5%. The CO combustion chamber temperature is going to be maintained between 840-1166 ºF with a residence time 4.17-7.32 second. The facility is required to establish emission factor during the performance test for new Roaster No. 2 (ES-R2-New). The facility is required to calculate total amount of VOC emissions monthly and submit semi-annual reports of those calculations to ensure compliance. The facility is required to record 3-hour block average temperature of CO in a logbook. For emissions change, see Section 7. It can be seen from the Total change in emissions-table, there is a minor decrease in emissions due to this modification.

This avoidance condition was initially included in the Air Quality Permit No. 05029T10. See permit review for Air Quality Permit No. 05029T10 for full discussion.

112(r)

This facility is **NOT** subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements.

RACT

Cabarrus County was in moderate nonattainment for the 1997 8-hour ozone standard. S&D has accepted an avoidance condition limiting VOCs to less than 100 tons per year to avoid applicability to RACT. All counties in NC were re-designated as attainment effective August 27, 2015. [Ref: Federal Register /Vol. 80, No. 144 /Tuesday, July 28, 2015 /Rules and Regulations.] The facility must keep the VOC avoidance condition in the permit, because the limitation was used to bring the area back into attainment. See the discussion in Section 7 regarding the implications with respect to this avoidance condition resulting from the addition of the new roaster.

Compliance Assurance Monitoring (CAM)

The compliance assurance monitoring (CAM) rule requires the facility to conduct monitoring to provide a reasonable assurance of compliance with applicable requirements under this act. Monitoring focuses on emission units that rely on pollution control device to achieve compliance with applicable standards. Per 40 CFR 64.5 (and 15A NCAC 02D .0614(e)), an analysis for CAM applicability is required to be submitted with a permit application for large pollution-specific emissions units (PSEU). A large PSEU is one that has a post-control potential to emit of more than major source levels. The new catalytic oxidizer is not considered a large PSEU and therefore a CAM analysis is NOT required as a part of this permit application.

9. Facility-Wide Air Toxics:

The most recent modeling was conducted in 2008 because of S & D adding a new coffee roaster, ES-R6. The modeling was reviewed by Tom Anderson indicated the modeling demonstrated compliance with the acceptable ambient levels (AALs) on a source-by-source basis.

There is no major change in Stack parameters for new Roaster No.2:

Stack Parameters	Old Roaster No. 2	New Roaster No. 2
Stack Height from Ground (ft)	62.0	62.4
Stack Diameter (ft)	1.50	1.48
Stack Temperature (ºF)	830	842-1166
Stack Exit Velocity Actual (ft/sec)	65.2	73.6

The air toxics evaluation involved acetaldehyde, acetic acid, acrolein, and formaldehyde. These TAPs (Toxic Air Pollutants) must be evaluated separately because the facility has previously conducted air modeling of these TAPs and the modeled emission limits are included in the permit.

The table below shows the emission rates used in the modeling and the percentage of the AALs at the maximum modeled concentrations. The table also include the potential emissions from the Roaster No. 2 (**ID No. RS-R2-New**). As shown in the table, emission from new Roaster No.2 represents only a small fraction of the total TAP emission rates used in the air modeling. Roaster No. 2 does not pose an unacceptable risk to human health. No further analysis for these TAPs is necessary. No changes to the current permit condition are necessary.

TAP	**Results of 2008 Modeling Demonstration**		**Potential Emissions under this Permit Modification**	
	Total Emission Rates Used in Modeling from Coffee Roasters (ES-R1 through ES-R6) (lb/hr)	**% of AAL at Maximum Modeled Concentration**	**Total Emission Rates from New Roaster No. 2 (ES-R2-New**	**% of Total Emissions**
Acetaldehyde	7.49	<1%	1.01	13.5%
Acetic Acid	7.85	2%	1.15E-02	0.14%
Acrolein	0.10	1%	2.51E-04	0.02%
Formaldehyde	4.44	31%	2.49E-03	0.05%

The total emissions were then compared with TPER for n-hexane as it was not modeled before. I have not included phenol as new Roaster No. 2 does not emit phenol. As shown below, the facility-wide estimated emissions of n-hexane are below its TPER, and no further analysis for this TAP is necessary.

TAP	**Potential Emissions from Roaster No.2**	**Actual Emissions as Reported in 2015 Emission Inventory**		**Total Emissions**		**TPER**		
	lb/hr	**lb/yr**	**lb/hr**	**lb/hr**	**lb/day**	**lb/hr**	**lb/day**	**lb/yr**
Hexane, n-	1.44E-02	638.9	7.29E-02	8.73E-02	2.09		23	

Notes:

- The hourly emissions (actual) were determined by dividing the actual annual emissions by 8760 hours per year of operation.

10. Facility Emission Review:

Facility-wide potential emissions prior to modification and after modification were provided in the permit application and shown below.

Pollutants	Facility-Wide Potential Emissions prior to Modification (tpy)		Facility-Wide Potential Emissions after Modification (tpy)	
	Uncontrolled	**Controlled**	**Uncontrolled**	**Controlled**
PM/PM10/PM2.5	831.73	28.81	1,010	28.30
CO	48.27	40.94	44.65	44.65
NO_x	25.19	25.19	24.25	24.25
SO_2	0.15	0.15	0.14	0.14
VOC	4,067	203.58	3,213	160.55
acetaldehyde	655.90	32.77	587.2	29.74
Acetic Acid	688.60	34.39	535.9	26.76
Acrolein	9.25	0.453	7.51	0.366
Formaldehyde	389.90	19.50	312.3	15.62
Hexane	12.74	0.64	11.76	0.60

- Previous permit indicates Facility-wide Uncontrolled PM emissions 74,129 TPY and Controlled PM emissions 30.73TPY due to incorrect emission factor on Green Bean Handling (ID Nos ES-BH1 and ES-BH2) emissions calculation. The facility (Consultant) corrected facility-wide PM emissions in this application:

  Uncontrolled PM emissions – 831.73TPY and Controlled PM emissions – 28.81.

  - As per email on June 19, 2017, the facility has overestimated uncontrolled emissions from the green bean handling sources (ES-BH1, BH2). Controlled PM emissions from ES-BH1 and BH2 were based on a controlled emission factor in AP-42. No uncontrolled-emission factor is available, so previous submittal conservatively assumed the bagfilters were achieving a 99.99% control. Therefore, back-calculating controlled emissions were based on the controlled rate divided by (1 – 0.9999 = 0.0001). This grossly overestimates uncontrolled rates and the facility stopped using that method. Since this source was not part of the equipment being installed, we did not include these details in the submittal. Please note, the controlled emissions are not being modified from the ES-BH1, BH2 source.
- Previous permit indicates Facility-wide Uncontrolled CO emissions – 125 TPY and Controlled CO emissions – 11.98 TPY due to improper emission factors.
  - As per email on June 20, 2017, the facility has modified the CO emission factor in this submittal as cited in Emission Assumptions & Calculations I. The old factor used the AP-42 factor for a continuous roaster at 0.098 lb/ton. S&D uses batch roasters which have a CO emission factor of 0.55 lb/ton. The prior to modification emissions summary still had the improper emission factor incorporated into the CO emissions.

  The above Table indicates Controlled VOC emissions (Prior and after modifications) greater than 100 TPY as its calculated emissions. The facility is still required to record 12-month rolling sums to show actual VOC stay below 100 TPY. Please see actual emissions for 2011 through 2015 are reported in the header of this permit review.

11. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. South Carolina and Mecklenburg County-local program are an affected state and a local program within 50 miles of the facility.

12. Other Regulatory Considerations:

- Application fee is required with this application.
- A Professional Engineers Seal is NOT required with this application.
- A zoning consistency determination is NOT required for this application.
- A 30-day public notice and 45-day EPA review is required for this application.

13. Recommendations/Conclusion:

DAQ recommends the issuance of Air Permit No. 05029T19 to S&D Coffee Company.